

# Abbreviations and Acronyms

AADSF	Advanced Automated Directional Solidification Furnace	CAGI	computer-aided grid interface
AAS	American Astronomical Society	CAMEX	Convection and Moisture Experiment
ACES	advanced control evaluation for structures	CaPE	Convection and Precipitation/ Electrification
ACTIS	Advanced Computed Tomography Inspection System	CAR	critical area response
AEOLUS	Autonomous Earth Orbiting Lidar Utility Sensor	CASE	computer-aided software engineering
AETF	Advanced Engine Test Facility	CAVE	Computer Applications and Virtual Environments Laboratory
AFM	advancing front method	CBL	convective boundary layer
AFSIG	Ascent Flight System Integration Group	CCD	charge-coupled device
Ag-MH	silver-metal hydride	CCP	center cracked panel
Ag-Zn	silver-zinc	CCT	cognitive computing techniques
AGU	American Geophysical Union	Cd	cadmium
AI	artificial intelligence	CDDF	Center Director's Discretionary Fund
AIAA	American Institute of Aeronautics and Astronautics	CEC	Chemical Equilibrium Computer
AITP	Aerospace Industry Technology Program	CEETC3	Combined Environmental Effects Test-Cell 3 system
albedo	reflected solar energy	CFC	chlorofluorocarbon
AMCC	advanced main combustion chamber	CFD	computational fluid dynamics
AMPR	Advanced Microwave Precipitation Radiometer	CFE	continuous-flow electrophoresis
ANOVA	analysis of variance	CGRO	Compton Gamma Ray Observatory
AOPL	Aerosol Optical Properties Laboratory	CHyMP	CaPE Hydrometeorology Project
AR&C	automated rendezvous and capture	CICM	coaxial injection combustion model
ARC	Aerophysics Research Center	CIRS	composite infrared spectrometer
ARCS	Argon Release for Controlled Studies sounding rocket	CLR	coherent laser radar
ASCA	Advanced Satellite for Cosmology and Astrophysics	cm	centimeter
ASRM	advanced solid rocket motor	CO	carbon monoxide
ASTEX	Atlantic Stratocumulus Transition Experiment	CO <sub>2</sub>	carbon dioxide
ASTM	American Society for Testing Materials	codecs	compressor-decompressors
ATD	alternate turbopump development	COHMEX	Cooperative Huntsville Meteorological Experiment
ATLAS-3	Third Atmospheric Laboratory for Applications and Science Mission	CORSSTol	Cylinder Optimization of Rings, Skin, and Stringers with Tolerance sensitivity
ATMOS	Atmospheric Trace Molecules Observed By Spectroscopy	COST	controls, optics, structures, and thermal
ATS	automated torque sensor	COTS	commercial off-the-shelf
AXAF-I	Advanced X-Ray Astrophysics Facility— Imaging	CRES	corrosion-resistant steel
BATSE	Burst and Transient Source Experiment	CSC	Computer Science Corporation
blisk	integrally bladed turbine disk	CSI	controls/structures interaction
BOL	beginning-of-life	CSI/GTF	Controls/Structures Interaction Ground Test Facility
BTOS	Beam Transmission Optical System	CTOD	crack-tip opening displacement
CA	clocking angle	CTTP	Cryogenic Tank Technology Program
CAD	computer-aided design	Cu	copper
		CW	continuous wave
		DAAC	Distributed Active Archive Center
		dc	direct current
		DC-X	delta clipper experimental vehicle
		dc/dc	direct current/direct current
		DCE	DC electric field instrument

DMSP SSM/I	Defense Meteorological Satellite Program Special Sensor Microwave/Imager	GCM	general circulation model
		GDSS	General Dynamics Space Systems
DOD	Department of Defense	Ge	germanium
DOE	Department of Energy	GENIE	general grid generation system
DSMC	direct simulation Monte Carlo analysis	GEO	geosynchronous orbit
DTM	digital transient model	GEOSIM	GEOphysical fluid-flow SIMulator
DTO	demonstration test objective	GEOWARN	Global Emergency Observation Warning and Relief Network
ECMWF	European Center for Medium-range Weather Forecasting	GEWEX	Global Energy and Water Cycle Experiment
EDO	extended-duration orbiter	GGOT	Gas Generator Oxidizer Turbine
ELV	expendable launch vehicles	GGs	Global Geospace Study
EOL	end-of-life	GHC	generalized hyper-coherence
EOS	Earth Observation System	GHe	gaseous helium
EPA	Environmental Protection Agency	GIS	geographic information system
EPFCG	elastic-plastic fatigue crack growth	GLOBE	GLOBal Backscatter Experiment
EPRI	Electric Power Research Institute	GN&C	guidance, navigation, and control
EPS	electrical power system	GOES	Geostationary Operational Environmental Satellite
ERBE	Earth Radiation Budget Experiment	GONG	Global Oscillations Network Group
ESA	European Space Agency	GPC	Gravity Probe B
ET	elapsed time	GPS	Global Positioning System
ETO	Earth-to-Orbit	GRAM	Global Reference Atmospheric Model
EUV	extreme ultraviolet	GSFC	Goddard Space Flight Center
eV	electron volts	GST	glutathione S-transferase
EVA	extravehicular activity	GTF	ground test facility
EVM	Experimental Vector Magnetograph (also EXVM)	GVaP	Global Energy and Water Cycle Experiment Water Vapor Project
f#	focal ratio	H <sup>+</sup>	hydrogen ion
FACE	Florida Area Cumulus Experiment	HBMS	Hirshfelder-Buehler-McGee-Sutton
FAD	failure assessment diagram	HCF	high-cycle fatigue
FDIR	fault detection, isolation, and recovery	HCF	hydrogen cold flow
FDNS	Finite-Difference, Navier-Stokes	HDOS	Hughes Danbury Optical Systems
FEM	finite element model	He	helium
FOV	field of view	He <sup>+</sup>	helium ion
fps	frames per second	He-Cd	helium-cadmium
FRL	Flight Robotics Laboratory	He-Ne	helium-neon
FSSP	Forward-Scattering Spectrometer Probe	HEE	hydrogen environmental embrittlement
ftp	file transfer protocol	HESI	High-Energy Solar Imager
FUV	far ultraviolet	Hex	heat exchanger
G	units of gravitational force	Hg	mercury
g/cm <sup>3</sup>	grams per cubic centimeter	Hg-Xe	mercury-xenon
Ga	gallium	HH-PCAM	hand-held protein crystallization in microgravity hardware
GASP	General Aerodynamic Simulation Program	HI-PAC DTV	high-packed digital television (also HI-PAC)
GATV	ground-to-air television	HIP	hot isostatic pressing
GC	generic card	HIV	human immunodeficiency virus
GCIP	GEWEX Continental Scale International Project	Ho, Tm:YAG	holmium, thulium: yttrium aluminum garnet

HOMO–LUMO	highest occupied molecular orbital-lowest unoccupied molecular orbital	KATE	Knowledge-based Autonomous Test Engineer
HOSC	Huntsville Operations Support Center	kbps	kilobits per second
HPFT	high-pressure fuel turbine	keV	kiloelectron volts
HPFTP	high-pressure fuel turbopump	kHz	kilohertz
HPOPTP	high-pressure oxygen turbopump	km	kilometer
HPOTP	high-pressure oxidizer turbopump	km/s	kilometers per second
HRDM	high-rate demultiplexer	KSC	Kennedy Space Center
HRM	high-rate multiplexer	Ku-band	15.250 to 17.250 gigahertz
HRV	highly reusable vehicles	kWh	kilowatt hours
HSL	Huntsville Simulation Laboratory	L-O-L	like-on-like
HST	Hubble Space Telescope	LAD	liquid acquisition device
Hz	hertz	LALMM	load-allowable load minimum margin
IAU	International Astronomical Union	LaRC	Langley Research Center
ICD	interface control document	LAWS	Laser Atmospheric Wind Sounder
IDNDR	International Decade for National Disaster Reduction	lbm/sec	pound mass per second
IECEC	Intersociety Energy Conversion and Engineering Conference	LCF	low-cycle fatigue
IFM	in-flight maintenance	LDV	laser Doppler velocimeter
IGES	Initial Graphics Exchange Specification	LEIF	Low-Energy Ion Facility
ILC	intelligent load controller	LEO	low-Earth orbit
IMF	interplanetary magnetic field	LIS	Lightning Imaging Sensor
IML–2	International Microgravity Laboratory 2	LLPC	liquid-liquid partition chromatography
INS	inertial navigation system	LMM	load minimum margin
InSb	indium antimonide	LMSC	Lockheed Missiles and Space Corporation
IPC	intelligent power controller	LN <sub>2</sub>	liquid nitrogen
IR	infrared	LO <sub>2</sub>	liquid oxygen (also lox)
IRAD	industrial research and development	LO <sub>2</sub> -LH <sub>2</sub>	liquid oxygen-liquid hydrogen
IRAS	Infrared Astronomy Satellite	LOLC	Laser Optical Particle Counter
IRTF	Infrared Telescope Facility	lox	liquid oxygen (also LO <sub>2</sub> )
ISCCP	International Satellite Cloud Climatology Project	LPFTP	low-pressure fuel turbopump
ISO	Infrared Space Observatory	LTC	low thermal conductivity
ISOPHOT	Infrared Space Observatory spectrophotometer	LUTE	Lunar Ultraviolet Telescope Experiment
ITCZ	InterTropical Convergence Zone	m	meter
ITL	Inducer Test Loop	MACAWS	Multi-center Airborne Coherent Atmospheric Wing Sensor
IV	independent variable	maglev	magnetically levitated
IWC	integrated water content	MARCSIM	MSFC automated rendezvous and capture simulation
J	joule	MB/s	megabits per second
JANNAF	Joint Army, Navy, NASA, and Air Force	MCC	main combustion chamber
JIRAD	joint independent research and development	MCP	microchannel plates
JPEG	Joint Photographic Experts Group	MCPT	multicycle proof test
JPL	Jet Propulsion Laboratory	MECO	main engine cutoff
JSC	Johnson Space Center	MeV	million electron volts
K	Kelvin	MHD	magnetohydrodynamic
KAO	Kuiper Airborne Observatory	MHz	megahertz
		MI	Magnetosphere Imager
		MIMR	Multifrequency Imaging Microwave Radiometer

MIXE	Marshall Imaging X-Ray Experiment	OLR	outgoing longwave radiation
MLT	magnetic local time	OMV	orbital maneuvering vehicle
MNA	2-methyl-4-nitroniline	OSEE	optically simulated electron emission
MOSFET	metal oxide semiconductor field-effect transistor	OSHA	Occupational Safety and Health Administration
MPa	megaPascal	OTD	Optical Transient Detector
MPEG	Motion Picture Experts Group	OTTR	Oxidizer Technology Turbine Rig
MR	mixture ratio	P&W	Pratt and Whitney
MSCSurv	Manned Spacecraft Crew Survivability	P-T	pressure-temperature
MSU	microwave sounding unit	PAM	portable automated mesonet
MTPE	Mission to Planet Earth	PAMELA	Phased-Array Mirror, Extendible Large Aperture
mV/m	millivolts per meter	PAN	polyacrylonitrile
v	frequency	PBL	planetary boundary layer
NAOMI	National Adaptive Optics Mission Initiative	PCC	Precision Castparts Corporation
NARC	North American Rayon Corporation	PCR	payload control room
NASCAP/GEO	NASA Analyzer Program for Geosynchronous Orbit	PCR	principal component regression
NASCAP/LEO	NASA Analyzer Program for Low-Earth Orbit	PDF	probability distribution function
NASP	National Aerospace Plane	PEG	polyethylene glycol
NAVC	Northeast Alternative Vehicle Consortium	PI	principal investigator
NBS	Neutral Buoyancy Simulator	PL	peak load
NCAR	National Center for Atmospheric Research	PLS	partial least squares
NDE	nondestructive evaluation	PMD	propellant management device
Ne	neon	PMM	probability matching method
NESDIS	National Environmental Satellite Data Information Service	POLAR	Potentials of Large Spacecraft in Auroral Regions
Ni	nickel	PRF	pulse repetition frequency
Ni-Cd	nickel-cadmium	PRISM	Passively Cooled Reconnaissance of the Interstellar Medium
Ni-MH	nickel-metal hydride	PSD	power spectral density
NiH <sub>2</sub>	nickel-hydrogen	PSEM	phase-synchronized enhancement method
NIR	near-infrared	PSI	phase-shifting interferometry
NIST	National Institute for Standards and Technology	PSI	plasma source instrument
NITROX	increased oxygen/reduced nitrogen	psia	pounds per square inch absolute
NLO	nonlinear optical	PSW	physical split-window
NLS	National Launch System	PTDS	Post-Test Diagnostic System
nm	nanometer	QE	quantum efficiency
NOAA	National Oceanic and Atmospheric Administration	QN	quadrivariate normal
NOx	nitric oxide	R-curves	resistance curves
NS	neutron star	R/S	range over standard
NSTS	National Space Transportation System	REFLEQS	REactive FLOW EQUation Solver
NTSC	National Television Standards Committee	RGB	red, green, blue
NURBS	non-uniform rational B-splines	RIMS	retarding ion mass spectrometer
NUV	near-ultraviolet	RLV	reusable launch vehicle
O <sup>+</sup>	oxygen ion	RMS	remote manipulator system
OACT	Office of Advanced Concepts and Technology	rms	root-mean-square
		RNTS	Rocket Nozzle Technology Subcommittee

ROSETA	range over standard deviation experimental trend analysis	STV	space transfer vehicle
RPC	remote power controller	SWRI	Southwest Research Institute
RSRM	redesigned solid rocket motor	SXI	Solar X-Ray Imager
RTG	radioisotope thermoelectric generator	TAL	time after launch
RTLS	return-to-launch site	TAL	trans-Atlantic landing
SAFD	System for Anomaly and Failure Detection	TAL	transoceanic abort landing
SAO	Smithsonian Astrophysical Observatory	TAPP	Twin Auroral Plasma Probes
SBIR	Small Business Innovative Research	TCA	thrust chamber assembly
SBTD	space booster technology demonstrator	$\tau_{\text{decay}}$	time constant
SCIFER	Sounding of the Cleft Ion Fountain Energization Region	Te	tellurium
SCIM	standard cubic inches per minute	TEM	transition electron microscope
SCN/H <sub>2</sub> O	succinonitrile/water	THM	traveling heater method
SDIO	Strategic Defense Initiative Organization	TIDE	Thermal Ion Dynamics Experiment
SDT	science definition team	TIPS	Thermal Input Printing System
SEDS	Students for the Exploration and Development of Space	Tm, Ho: YLF	thulium, holmium: yttrium lithium fluorine
SEDSAT	Students for the Exploration and Development of Space Satellite	TMI	Tropical Rainfall Measuring Mission Microwave Imager
SEEF	Space Environments Effects Facility	TOA	top-of-atmosphere
SHEELS	Simulator for Hydrology and Energy Exchange at Land Surface	TOGA COARE	Tropical Ocean Global Atmosphere Coupled Ocean Atmosphere Response Experiment
SHG	second harmonic generation	TPS	thermal protection system
Si	silicon	$\tau_{\text{rise}}$	rise time
SIM	simulation control room	TRMM	Tropical Rainfall Measuring Mission
SjGST	Schistosoma japonicum	TRP	Technology Reinvestment Project
SLA	stereolithography	TTA	turbine test article
SNR	signal-to-noise ratio	TTB	Technology Test-Bed
SNTP	space nuclear thermal propulsion	TTE	turbine test equipment
SOF	scintillating optical fibers	UAH	University of Alabama in Huntsville
SOFIC	Scintillating Optical Fiber Ionization Calorimeter	UAH-ARC	University of Alabama in Huntsville's Aerophysics Research Center
SOHO	Solar and Heliospheric Observatory	ULE	ultra-low expansion
SPIE	Society of Photo-optical Instrumentation Engineers	UPS	uninterruptible power supply
SPIP	Solid Propulsion Integrity Program	USML-2	U.S. Microgravity Laboratory-2
SPSR	space-portable spectroreflectometer	USMP-2	Second United States Microgravity Payload
SRM	solid rocket motor	USNAWC	U.S. Navy Air-Warfare Center
SSA	Space Suit Assembly	UTC	universal time coordinated
SSM/I	Special Sensor Microwave/Imager	UV	ultraviolet
SSM/PMAD	Space Station Module Power Management and Distribution	UVI	Ultraviolet Imager
SSME	space shuttle main engine	V	volt
SSTO	single-stage-to-orbit	Vac	volts, alternating current
STICS	super thermal ion composition spectrometer	VAS	Visible Infrared Spin-Scan Radiometer Atmospheric Sounder
STME	space transportation main engine	VDA	video decoder assembly
STS	space transportation system	Vdc	volts, direct current
		VEA	video encoder assembly
		VETA-I	Verification Engineering Test Article I

VGS	video guidance sensor
VI	virtual instrument
VISSR	Visible Infrared Spin-Scan Radiometer
VPCR	virtual payload control room
VPPA	variable polarity plasma arc
VR	virtual reality
VSIM	virtual simulation control room
VUV	vacuum ultraviolet
VWM	vector wind model
WTA	West Test Area
XUV	x-ray ultraviolet
Z-R	reflectivity-rain rate
Zn	zinc
°C	degrees Celsius
μm	micrometer